

32692

Customer Number

PATENT  
Docket No.: 54570US002

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: CLAYTON A. GEROGE, PAUL D. DRISCOLL, STEPHEN R. HARTSHORN  
AND MORGAN J. TAMSKY

Application No.: 09/299,965 Group Art Unit: 1733

Filed: April 26, 1999 Examiner: J. Aftergut

Title: CURABLE MECHANICAL FASTENERS

BRIEF ON APPEAL

Mail Stop: Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

<b>CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR § 1.8(a)]</b>	
I hereby certify that this correspondence is being:	
<input type="checkbox"/>	deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
<input checked="" type="checkbox"/>	transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (703) 872-9306. (6 pgs.)
April 13, 2005 Date	<i>Nancy M. Lambert</i> Signed by: Nancy M. Lambert

Dear Sir:

This is an appeal from the Office Action mailed on September 13, 2004, finally rejecting claims 1-3, 7-14 and 16-28.

A Notice of Appeal in this application was faxed on December 13, 2004, and was received in the USPTO on December 13, 2004.

The fee required under 37 CFR § 41.20(b)(2) for filing an appeal brief should be charged to Deposit Account No. 13-3723.

Appellants request the opportunity for a personal appearance before the Board of Appeals to argue the issues of this appeal. The fee for the personal appearance will be timely paid upon receipt of the Examiner's Answer.

Application No.: 09/299,965

Docket No. 54570US002

**REAL PARTY IN INTEREST**

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate, 3M Innovative Properties Company of St. Paul, Minnesota.

**RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any related appeals or interferences.

**STATUS OF CLAIMS**

Claims 1-3, 7-14, and 16-28 are pending in the application, and form the basis of this Appeal.

**STATUS OF AMENDMENTS**

No amendments have been filed after the final rejection.

**SUMMARY OF CLAIMED SUBJECT MATTER**

Claims 1-3, 7-12, and 16-21 concern a curable mechanical fastener comprising a fastener fabricated from a curable material with a fastening surface, and a complementary fastening surface, wherein

- (1) the curable material comprises a combination of at least one thermosettable composition and at least one thermoplastic composition (Page 3, lines 1-3, lines 15-17; page 13, lines 1-5; page 19, line 5-page 20, line 24 of the Specification);
- (2) the fastening surface is capable of being repeatedly attached and unattached to the complementary fastening surface (Page 2, lines 9-11, lines 22-26; page 5, line 24 to page 6, line 7 of the Specification); and
- (3) the fastening surface is capable of becoming permanently attached to the complementary fastening surface when cured (Page 2, lines 12-13; page 6, lines 23-27 of the Specification).

Claims 13-14 concern a curable mechanical fastener comprising a fastening surface comprising a plurality of fastening elements fabricated from a curable material coupled to a backing, and a complementary fastening surface, wherein

Application No.: 09/299,965

Docket No. 54570US002

- (1) the fastening surface is capable of being repeatedly attached and unattached to the complementary fastening surface (Page 2, lines 9-11, lines 22-26; page 5, line 24 to page 6, line 7 of the Specification); and
- (2) the fastening surface is capable of becoming permanently attached to the complementary fastening surface when cured (Page 2, lines 12-13; page 6, lines 23-27 of the Specification).

Claims 22-25 concern a method of forming a permanent fastener comprising the steps of: providing a curable mechanical fastener according to claim 1; attaching the fastening surface to the complementary fastening surface; and curing the mechanical fastener to provide a permanent fastener.

Claims 26-28 concern a multi-part curable mechanical fastener, comprising a first part comprising a fastening surface; a second part comprising a complementary fastening surface that complements the fastening surface; wherein at least one of the first part comprising the fastening surface and the second part comprising the complementary fastening surface is fabricated from a curable material comprising a combination of at least one thermosettable composition and at least one thermoplastic composition (Page 3, lines 1-3, lines 15-17; page 13, lines 1-5; page 19, line 5-page 20, line 24 of the Specification), such that when the fastening surface is mechanically attached to the complementary fastening surface, the multi-part curable mechanical fastener is capable of being cured to provide a permanent fastener (Page 2, lines 12-13; page 6, lines 23-27 of the Specification).

#### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

##### **First Ground of Rejection**

Claims 1-3, 7, 9-10, 19-20, 22, and 26 stand rejected under 35 USC § 102(b) as purportedly anticipated by U.S. Patents No 3,625,875 (Frauenglass et al.).

##### **Second Ground of Rejection**

Claims 1-3, 7, 9-10, 13, 16, and 18-27 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.) and 4,239,829 (Cohen).

Application No.: 09/299,965Docket No. 54570US002**Third Ground of Rejection**

Claims 8 and 12 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.) and 4,239,829 (Cohen) with any one of Alexander (US 4,155,327) or Bachmann (US 3,814,156) or Pearce, Jr (US 3,469,490).

**Fourth Ground of Rejection**

Claim 11 stands rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.) and 4,239,829 (Cohen) with any one of the Modern Plastics Encyclopedia or the Admitted Prior Art.

**Fifth Ground of Rejection**

Claims 1-3, 7, 9-10, 13-14, 16, and 18-27 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.); 4,239,829 (Cohen); and 5,077,870 (Melbye).

**Sixth Ground of Rejection**

Claims 17 stands rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.); 4,239,829 and 4,239,829 (Cohen) with any one of 5,196,266 (Lu) and 4,875,259 (Appeldorn).

**Seventh Ground of Rejection**

Claims 20 and 28 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.); 4,239,829 (Cohen); and 4,356,050 (Crivello).

Application No.: 09/299,965

Docket No. 54570US002

**ARGUMENT****First Ground of Rejection**

Claims 1-3, 7, 9-10, 19-20, 22, and 26 stand rejected under 35 USC § 102(b) as purportedly anticipated by U.S. Patents No 3,625,875 (Frauenglass et al.). Appellants respectfully disagree and request review and reversal of this rejection by the Board.

To anticipate a claim, the reference must teach every element of the claim. MPEP § 2142 (citations omitted). The Examiner states that Frauenglass discloses "a combination of a mixture of a thermoplastic resin including polyester thermoplastic resins and an anaerobic thermosetting resin<sup>1</sup> which was a methylacrylate resin would have been mixed together and would have been applied upon threaded components of fasteners in order to permanently secure the components together. . . ." (emphasis added)

Frauenglass discloses a mixture of thermoplastic resin and anaerobic adhesive which is prepared as a coating material (col 1 line 58) which is deposited onto a threaded pipe or fastener (col 1 line 74 –col 2 line 2). The fastener is not fabricated from the thermoplastic polymer/adhesive mixture.

Further, Frauenglass fails to disclose a fastener that is repeatedly attachable and unattachable. As provided on column 2, lines 14-21, Frauenglass notes that the anaerobic adhesives "when removed from the presence of air polymerize to form hard, durable resins." The adhesive is considered particularly suited to bonding metal and other nonporous materials because "they effectively exclude atmospheric oxygen from contact with the adhesive, and therefore the adhesive polymerizes to bond the surfaces together." The screw of Frauenglass coated with an anaerobic adhesive would not be repeatedly attachable and unattachable.

Frauenglass further fails to disclose a combination of a thermosettable composition and a thermoplastic composition as the curable material. As provided by Appellants on page 12, lines 23-27, a thermosettable composition is "one which can be cured (i.e., crosslinked), for example by exposure to, preferably, thermal radiation (although exposure to actinic radiation, moisture, or other means may also suffice) to yield a substantially infusible (i.e., thermoset) material. The anaerobic adhesives of

Application No.: 09/299,965

Docket No. 54570US002

Frauenglass are not characterized as thermosettable materials in the reference, nor do they meet Appellants' definition of the term, i.e., curable on exposure to radiation or heat. Accordingly, Frauenglass fails to disclose each and every element of claims 1-3, 7, 9-10, 19-20, 22 and 26.

### **Second Ground of Rejection**

Claims 1-3, 7, 9-10, 13, 16, and 18-27 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.) and 4,239,829 (Cohen). Appellants respectfully disagree and request review and reversal of this rejection by the Board.

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). To establish a *prima facie* case of obviousness, three criteria must be met. First, the prior art reference (or references) must teach or suggest all of the claim limitations. Second, there must be some suggestion or motivation, either in the cited reference (or references), or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Third, there must be a reasonable expectation of success. M.P.E.P. § 2142 (citations omitted).

Cohen discloses a hook and loop type fastener with an an interposed slow curing epoxy resin with a curing catalyst, i.e. a thermosettable composition, which is coated on the fastener. Cohen fails to teach or suggest making the fastener out of a combination of a thermoplastic/thermosettable composition. The Examiner acknowledges that Cohen fails to disclose the thermoplastic resin, and uses Frauenglass for that disclosure.

The Examiner states the use of an epoxy resin material of Cohen in combination or conjunction with a compatible thermoplastic material is obvious to those of skill in the art. However, the Examiner points to no disclosure in either the Cohen or the Frauenglass disclosure to support this conclusion. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure. See M.P.E.P §706.02(j).

---

<sup>1</sup> Appellants dispute the Examiner's characterization of the anaerobic adhesive as a "thermosetting resin" as defined by Appellants in the Specification on page 12, lines 23-27.

Application No.: 09/299,965

Docket No. 54570US002

Moreover, the substitution of the anaerobic adhesive of Frauenglass with the epoxy resin of Cohen would teach away from the disclosure of Frauenglass and potentially destroy its functional aspects. Frauenglass specifies the use of the anaerobic adhesive in combination with a thermoplastic resin in a specific attempt to employ anaerobic adhesives as a coating on fasteners (see, e.g., column 1, Background, discussing the desirability of anaerobic adhesives).

Further, neither Cohen nor Frauenglass disclose a fastener that is fabricated from this combination of a thermosettable composition with a thermoplastic composition. Applicants point out in the Specification, page 12, lines 7-10, that "the curable material is not merely an additive (e.g., a curable adhesive) that is applied as a separate component in a mechanical fastener system at or near the time that fastening is desired. Advantageously, the curable material is an integral part of the curable mechanical fasteners of the invention."

In contrast, the fastening surface and/or the complementary fastening surface of the present invention are made from a combination of a thermosettable composition and a thermoplastic composition. (See, e.g., page 3, lines 1-3, lines 15-17; page 13, lines 1-5; page 19, line 5-page 20, line 24 of the Specification). Neither Cohen nor Frauenglass teach the elements of Appellants claims, either alone or in combination. Appellants respectfully request this rejection be reversed.

### **Third Ground of Rejection**

Claims 8 and 12 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.) and 4,239,829 (Cohen) with any one of Alexander, Bachman, or Pierce, Jr. The Examiner relies on these disclosures to substitute the anaerobic adhesive in Frauenglass with the epoxy resin of Cohen.

For the reasons stated above, none of the additional references cited can cure the deficiencies of Cohen or Frauenglass as a reference. As neither Cohen nor Frauenglass teach fabricating the fastener from a combination of a thermoplastic composition and a thermosettable composition, neither can be combined with a reference that teaches a listing of various materials to arrive at the elements of claims 8 and 12. Even if, for the sake of argument, Cohen or Frauenglass could be considered to include the combination

Application No.: 09/299,965

Docket No. 54570US002

(which Appellants dispute), Cohen and Fraenglass only disclose the material as a coating or additive on the fastener, with no suggestion that the fastener can be repeatedly attached and unattached using a coating.

#### **Fourth Ground of Rejection**

Claim 11 stands rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.) and 4,239,829 (Cohen) with any one of the Modern Plastics Encyclopedia or the Admitted Prior Art. The Examiner relies on these disclosures to provide a semi-crystalline polyester for the thermoplastic polyester in Frauenglass.

For the reasons stated in the second rejection, none of the additional references cited can cure the deficiencies of Cohen or Frauenglass as a reference. As neither Cohen nor Frauenglass teach fabricating the fastener from a combination of a thermoplastic composition and a thermosettable composition, neither can be combined with a reference that teaches a specific thermoplastic material to arrive at the elements of claim 11. Even if, for the sake of argument, Cohen or Frauenglass could be considered to include the combination (which Appellants dispute), Cohen and Frauenglass only disclose the material as a coating or additive on the fastener, with no suggestion that the fastener can be repeatedly attached and unattached using a coating.

#### **Fifth Ground of Rejection**

Claims 1-3, 7, 9-10, 13-14, 16, and 18-27 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.); 4,239,829 (Cohen); and (Melbye). The Examiner relies on Melbye's disclosure to recite the mushroom shaped filaments in a mechanical fastener system.

For the reasons stated in the second rejection, none of the additional references cited can cure the deficiencies of Cohen or Frauenglass as a reference. As neither Cohen nor Frauenglass teach fabricating the fastener from a combination of a thermoplastic composition and a thermosettable composition, neither can be combined with a reference that teaches a specific fastener shape to arrive at the elements of claim 1-3, 7, 9-10, 13-14, 16, and 18-27. Even if, for the sake of argument, Cohen or



Application No.: 09/299,965Docket No. 54570US002

Faenglass could be considered to include the combination (which Appellants dispute), Cohen and Fraenglass only disclose the material as a coating or additive on the fastener, with no suggestion that the fastener can be repeatedly attached and unattached using a coating.

#### **Sixth Ground of Rejection**

Claims 17 stands rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.); 4,239,829 and 4,239,829 (Cohen) with any one of (Lu) and (Appeldorn). Lu and Appeldorn's disclosures for recessed and protruding components of a fastener.

For the reasons stated in the second rejection, none of the additional references cited can cure the deficiencies of Cohen or Frauenglass as a reference. As neither Cohen nor Frauenglass teach fabricating the fastener from a combination of a thermoplastic composition and a thermosettable composition, neither can be combined with a reference that teaches a specific thermoplastic material to arrive at the elements of claim 11. Even if, for the sake of argument, Cohen or Faenglass could be considered to include the combination (which Appellants dispute), Cohen and Fraenglass only disclose the material as a coating or additive on the fastener, with no suggestion that the fastener can be repeatedly attached and unattached using a coating.

#### **Seventh Ground of Rejection**

Claims 20 and 28 stand rejected under 35 USC § 103(a) as purportedly unpatentable over the combined teachings of U.S. Patents Nos. 3,625,875 (Frauenglass et al.); 4,239,829 (Cohen); and (Crivello). The Examiner relies on these disclosures to provide a Crivello to teach radiation cure of a functionalized thermoplastic as an alternative to the epoxy resin of Cohen.

For the reasons stated in the second rejection, none of the additional references cited can cure the deficiencies of Cohen or Frauenglass as a reference. As neither Cohen nor Frauenglass teach fabricating the fastener from a combination of a thermoplastic composition and a thermosettable composition, neither can be combined with a reference that teaches a specific thermoplastic material to arrive at the elements of claims 20 and 28. Even if, for the sake of argument, Cohen or Faenglass could be

Application No.: 09/299,965Docket No. 54570US002

considered to include the combination (which Appellants dispute), Cohen and Fraenglass only disclose the material as a coating or additive on the fastener, with no suggestion that the fastener can be repeatedly attached and unattached using that coating.

CONCLUSION

For the foregoing reasons, appellants respectfully submit that the Examiner has erred in rejecting this application. None of the references as combined teach or suggest use of curable materials of any type to fabricate the fastener, that the fastener can be repeatedly attached and unattached, or that the curable composition comprises a combination of at least one thermosettable composition and at least one thermoplastic composition. Appellants respectfully request that the Examiner be reversed on all counts.

Respectfully submitted,

April 13, 2005  
Date

By: Nancy M. Lambert  
Nancy M. Lambert, Reg. No.: 44,856  
Telephone No.: (651) 733-2180

Office of Intellectual Property Counsel  
3M Innovative Properties Company  
Facsimile No.: 651-736-3833

Application No.: 09/299,965

Docket No. 54570US002

CLAIMS APPENDIX

1. (previously presented) A curable mechanical fastener comprising:  
a fastener fabricated from a curable material with a fastening surface, and a complementary fastening surface,  
wherein the curable material comprises a combination of at least one thermosettable composition and at least one thermoplastic composition; and  
wherein the fastening surface is capable of being repeatedly attached and unattached to the complementary fastening surface, and wherein the fastening surface is capable of becoming permanently attached to the complementary fastening surface when cured.
2. (original) The curable mechanical fastener of claim 1, wherein the curable mechanical fastener is reclosable for at least one hour after fabrication.
3. (original) The curable mechanical fastener of claim 1, wherein the curable mechanical fastener is reclosable for at least one month after fabrication.
- 4-6 (canceled)
7. (Previously presented) The curable mechanical fastener of claim 1, wherein the thermosettable composition comprises at least one thermosettable material selected from the group consisting of (meth)acrylates, urethanes, ethers, epoxies, cyanates, esters, phenolics, polyimides, amine formaldehyde condensates, and mixtures thereof.
8. (Previously presented) The curable mechanical fastener of claim 1, wherein the thermosettable composition comprises an epoxy.
9. (Previously presented) The curable mechanical fastener of claim 1, wherein the thermoplastic composition comprises at least one thermoplastic material selected from the group consisting of polyesters, polyolefins, polyamides, polyethers, polyurethanes, plasticized polyvinyl chloride, thermoplastic elastomer block copolymers,

Application No.: 09/299,965Docket No. 54570US002

phenoxy resins, polyketones, silicones, polyetherimides, polycarbonates, polysulfones, polyoxides, and mixtures thereof.

10. (Previously presented) The curable mechanical fastener of claim 1, wherein the thermoplastic composition comprises a polyester.
11. (original) The curable mechanical fastener of claim 10, wherein the polyester is semi-crystalline at room temperature.
12. (Previously presented) The curable mechanical fastener of claim 1, wherein the thermosettable composition comprises an epoxy and the thermoplastic composition comprises a polyester.
13. (Previously presented) A curable mechanical fastener comprising:  
a fastening surface comprising a plurality of fastening elements fabricated from a curable material coupled to a backing, and  
a complementary fastening surface,  
wherein the fastening surface is capable of being repeatedly attached and unattached to the complementary fastening surface, and wherein the fastening surface is capable of becoming permanently attached to the complementary fastening surface when cured.
14. (original) The curable mechanical fastener of claim 13, wherein at least one fastening element is mushroom-shaped.
15. Canceled.
16. (original) The curable mechanical fastener of claim 1, wherein the curable mechanical fastener is a hook-and-loop mechanical fastener.

Application No.: 09/299,965Docket No. 54570US002

17. (original) The curable mechanical fastener of claim 1, wherein the fastening surface comprises protruding fastening elements and the complementary fastening surface comprises recessed structures.
18. (Previously presented) The curable mechanical fastener of claim 1, wherein the fastener is formed by a method selected from the group consisting of extruding, melt-blowing, molding, and microreplicating.
19. (previously presented) A mechanical fastener according to claim 1 which has been cured.
20. (original) The cured mechanical fastener according to claim 19, wherein the curable mechanical fastener is cured using actinic radiation.
21. (original) The cured mechanical fastener according to claim 19, wherein the cured mechanical fastener has an overlap shear strength of at least about 7 MPa.
22. (original) A method of forming a permanent fastener comprising the steps of:  
providing a curable mechanical fastener according to claim 1;  
attaching the fastening surface to the complementary fastening surface; and  
curing the mechanical fastener to provide a permanent fastener.
23. (original) The method of claim 22, further comprising the step of attaching the curable mechanical fastener to a substrate.
24. (original) The method of claim 23, wherein the curable mechanical fastener is permanently attached to the substrate.
25. (original) The method of claim 22, wherein the complementary fastening surface is part of a curable mechanical fastener, the method further comprising the step of permanently attaching the curable mechanical fastener comprising the complementary fastening surface to a substrate.

Application No.: 09/299,965Docket No. 54570US002

26. (Previously presented) A multi-part curable mechanical fastener, comprising:  
a first part comprising a fastening surface;  
a second part comprising a complementary fastening surface that complements the fastening surface;  
wherein at least one of the first part comprising the fastening surface and the second part comprising the complementary fastening surface is fabricated from a curable material comprising a combination of at least one thermosettable composition and at least one thermoplastic composition, such that when the fastening surface is mechanically attached to the complementary fastening surface, the multi-part curable mechanical fastener is capable of being cured to provide a permanent fastener.
27. (Previously presented) The curable mechanical fastener of claim 26, wherein both the fastening surface and the complementary fastening surface comprises a curable material.
28. (Previously presented) The curable mechanical fastener of claim 27, wherein the curable material of either the fastening surface or the complementary surface comprises a functionalized-thermoplastic composition.